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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|------------------------------|------------------|
| 09/726,192 | 11/29/2000 | Matthew Andrews | 554-250(ANDREWS 7-6-25-5 | 5966 |
| 26291 | 7590 | 10/07/2004 | EXAMINER | |
| JACOBS, LASHONDA T | | | | |
| MOSER, PATTERSON & SHERIDAN L.L.P. 595 SHREWSBURY AVE, STE 100 FIRST FLOOR SHREWSBURY, NJ 07702 | | | ART UNIT | PAPER NUMBER |
| | | | 2157 | |

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 09/726,192 | Applicant(s) ANDREWS ET AL. | |
| | Examiner LaShonda T Jacobs | Art Unit 2157 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on June 28, 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

This Office Action is in response to Applicant's Request for Reconsideration filed on June 28, 2004. Claims 1-21 are presented for further examination.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 4-13, 16 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brendel et al (hereinafter "Brendel", 5,774,660) in view of Schuba et al (hereinafter, "Schuba", 6,724,733).

As per claim 1 and 16, Brendel discloses a method for determining at least one best-performing content server in response to a request in a network including a plurality of content servers, at least one redirection server, and a plurality of clients, the method comprising the steps of:

- creating a plurality of client clusters (col. 2, lines 59-65 and col. 8, lines 36-42).

However, Brendel does not explicitly disclose:

- wherein each of said plurality of client clusters includes one or more clients having similar network distance; and
- identifying said at least one best-performing content server for each of said plurality of client clusters by determining network distances between each of said plurality of client

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clusters and each of said plurality of content servers and selecting at least one content server for each of said plurality of client clusters having a minimum network distance there between.

- mapping each of said plurality of client clusters to a corresponding said at least one identified best-performing content server.

Schuba discloses a method and apparatus for determining approximate network distances using reference locations including:

- wherein each of said plurality of client clusters includes one or more clients having similar network distance (abstract, col. 6, lines 56-67 and col. 7, lines 1-12);
- identifying said at least one best-performing content server for each of said plurality of client clusters by determining network distances between each of said plurality of client clusters and each of said plurality of content servers and selecting at least one content server for each of said plurality of client clusters having a minimum network distance there between (abstract, col. 6, lines 56-67, col. 7, lines 1-12 and col. 8, lines 59-65); and
- mapping each of said plurality of client clusters to a corresponding said at least one identified best-performing content server (col. 7, lines 40-55).

Given the teaching of Schuba, it would have been obvious to one of ordinary skill in the art to modify Brendel by including the network distance between each client and servers in order to identify the best server according to network distance.

As per claim 2, Brendel discloses

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- wherein the redirection server is an authoritative domain name (DN) server which receives said requests from a plurality of local DNS servers (col. 2, lines 18-35 and col. 4, lines 7-19).

As per claim 3, Brendel discloses:

- wherein the request is a domain name (DN) request (col. 2, lines 18-35 and col. 4, lines 7-19).

As per claim 5 and 18, Brendel discloses:

- wherein the step of creating said plurality of client clusters includes the step of obtaining distance and load information from each of said plurality of content servers (col. 8, lines 36-42 and col. 9, lines 21-40).

As per claims 6 and 19, Brendel discloses wherein the step of obtaining distance information includes the steps of:

- collecting at said plurality of content servers a plurality of distance tuples wherein each distance tuple comprises one or more of the following: a network distance, a content server identifier, a time-stamp, and a client internet protocol (IP) address (col. 9, lines 21-40); and
- collecting at said plurality of content servers a plurality of load tuples wherein each load tuple comprises one or more of the following: a time-stamp, a content-server ID, a client IP address, a number of hits, and a domain index (col. 9, lines 21-40).

As per claim 7, Brendel discloses the invention substantially as claims discussed above.

However, Brendel does not explicitly disclose the step of:

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- pulling said plurality of distance and load tuples from each of said plurality of content servers at successive data acquisition intervals and storing the plurality of distance and load tuples at said at least one redirection server.

Schuba discloses a method and apparatus for determining approximate network distances using reference locations including:

- pulling said plurality of distance and load tuples from each of said plurality of content servers at successive data acquisition intervals and storing the plurality of distance and load tuples at said at least one redirection server (col. 8, lines 48-52).

Given the teaching of Schuba, it would have been obvious to one of ordinary skill in the art to modify Brendel by including the network distance between each client and servers in order to identify the best server according to network distance.

As per claim 8, Brendel discloses the invention substantially as claims discussed above.

However, Brendel does not explicitly disclose the step of:

- multiplying certain data values of said plurality of distance and load tuples by a weighting factor in each of said successive data acquisition intervals.

Schuba discloses a method and apparatus for determining approximate network distances using reference locations including:

- multiplying certain data values of said plurality of distance and load tuples by a weighting factor in each of said successive data acquisition intervals (col. 8, lines 48-52).

Given the teaching of Schuba, it would have been obvious to one of ordinary skill in the art to modify Brendel by including the network distance between each client and servers in order to identify the best server according to network distance.

As per claim 9, Brendel discloses the invention substantially as claims discussed above.

However, Brendel does not explicitly disclose:

- wherein said network distance is computed as one of a round trip time, jitter, bandwidth and packet loss.

Schuba discloses a method and apparatus for determining approximate network distances using reference locations including:

- wherein said network distance is computed as one of a round trip time, jitter, bandwidth and packet loss (col. 8, lines 48-52).

Given the teaching of Schuba, it would have been obvious to one of ordinary skill in the art to modify Brendel by calculating the network distance between each client and servers according to (round trip time, jitter etc.) in order to identify the best server according to network distance.

As per claim 10, Brendel discloses the invention substantially as claims discussed above.

However, Brendel does not explicitly disclose:

- wherein said round trip time is computed by monitoring all data packets transmitted and received by one of said plurality of content servers.

Schuba discloses a method and apparatus for determining approximate network distances using reference locations including:

- wherein said round trip time is computed by monitoring all data packets transmitted and received by one of said plurality of content servers (col. 8, lines 48-52).

Given the teaching of Schuba, it would have been obvious to one of ordinary skill in the art to modify Brendel by calculating the network distance between each client and servers according to (round trip time, jitter etc.) in order to identify the best server according to network distance.

As per claim 11, Brendel discloses:

- grouping distance tuples according to content server ID and CIDR prefix similarity to obtain data values for each grouping (col. 2, lines 59-65 and col. 8, lines 36-42);
- storing said data values at respective leaf nodes of a hierarchical tree structure wherein said hierarchical tree structure includes connected nodes including a root node and a plurality of interior and leaf nodes such that an entire CIDR address space is represented by said root node (col. 2, lines 59-65 and col. 8, lines 36-42); and
- pruning said hierarchical tree structure to determine said plurality of client clusters. (col. 2, lines 59-65 and col. 8, lines 36-42).

As per claim 12, Brendel discloses the invention substantially as claims discussed above.

However, Brendel does not explicitly disclose:

- wherein said data values stored at each of said respective leaf nodes include for at least one of said plurality of content servers: a sum of network distances, a sum of the squares of network distances, and a total number of received tuples.

Schuba discloses a method and apparatus for determining approximate network distances using reference locations including:

- wherein said data values stored at each of said respective leaf nodes include for at least one of said plurality of content servers: a sum of network distances, a sum of the squares of network distances, and a total number of received tuples (col. 8, lines 48-52).

Given the teaching of Schuba, it would have been obvious to one of ordinary skill in the art to modify Brendel by calculating the network distance between each client and servers in order to identify the best server according to network distance.

As per claim 13, Brendel discloses:

- wherein the pruning step further comprises the steps of comparing sibling leaf nodes in said tree structure to determine whether there is sufficient similarity (col. 2, lines 59-65 and col. 8, lines 36-42);
- combining said sibling leaf nodes into a parent node if sufficient similarity exists (col. 2, lines 59-65 and col. 8, lines 36-42);
- repeating the comparing and combining steps if sufficient similarity exists (col. 2, lines 59-65 and col. 8, lines 36-42); and
- identifying remaining leaf nodes as said client clusters if sufficient similarity does not exist (col. 2, lines 59-65 and col. 8, lines 36-42).

As per claim 20, Brendel discloses the invention substantially as claims discussed above.

However, Brendel does not explicitly disclose:

- means for modifying said determined network distance according to the number of distance tuples received.

Schuba discloses a method and apparatus for determining approximate network distances using reference locations including:

- means for modifying said determined network distance according to the number of distance tuples received (col. 8, lines 48-52).

Given the teaching of Schuba, it would have been obvious to one of ordinary skill in the art to modify Brendel by including the network distance between each client and servers in order to identify the best server according to network distance.

As per claim **21** Brendel discloses the invention substantially as claims discussed above.

However, Brendel does not explicitly disclose:

- means for maintaining said identification of said at least one identified best performing content server for an amount of time determined by a confidence level calculation.

Schuba discloses a method and apparatus for determining approximate network distances using reference locations including:

- means for maintaining said identification of said at least one identified best performing content server for an amount of time determined by a confidence level calculation (col. 8, lines 48-52).

Given the teaching of Schuba, it would have been obvious to one of ordinary skill in the art to modify Brendel by including the network distance between each client and servers in order to identify the best server according to network distance.

3. Claims **4**, **14-15** and **17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brendel in view of Schuba and in further view of Wolf et al (hereinafter, "Wolf", 6,374,297)

As per claims **4** and **17**, Brendel in view of Schuba discloses the invention substantially as claims discussed above.

However, Brendel in view of Schuba does not explicitly disclose:

- the step of assigning a selection probability to each of said at least one identified best-performing content server, wherein said selection probability ensures that a maximum service capacity of each of said at least one identified best performing content server is never exceeded.

Wolf discloses a method and apparatus for load balancing of web cluster farms including:

- the step of assigning a selection probability to each of said at least one identified best-performing content server, wherein said selection probability ensures that a maximum service capacity of each of said at least one identified best performing content server is never exceeded (abstract, col. 2, lines 42-52, col. 3, lines 13-31 and col. 9, lines 40-62).

Given the teaching of Wolf, it would have been obvious to one of ordinary skill in the art to modify Brendel in view of Schuba by including probability rules for selecting the best server within the web server cluster in order to distribute a client request to an appropriate server for servicing the request.

As per claim 14, Brendel in view of Schuba discloses the invention substantially as claims discussed above.

However, Brendel in view of Schuba does not explicitly disclose:

- wherein the step of mapping each of said plurality of client clusters with the corresponding, said at least one the identified best-performing content server comprises the step of assigning an assignment probability to each of said at least one identified best-performing content server.

Wolf discloses a method and apparatus for load balancing of web cluster farms including:

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- wherein the step of mapping each of said plurality of client clusters with the corresponding, said at least one the identified best-performing content server comprises the step of assigning an assignment probability to each of said at least one identified best-performing content server (abstract, col. 2, lines 42-52, col. 3, lines 13-31 and col. 9, lines 40-62).

Given the teaching of Wolf, it would have been obvious to one of ordinary skill in the art to modify Brendel in view of Schuba by including probability rules for selecting the best server within the web server cluster in order to distribute a client request to an appropriate server for servicing the request.

As per claim 15, Brendel in view of Schuba discloses the invention substantially as claims discussed above.

However, Brendel in view of Schuba does not explicitly disclose:

- wherein said assignment probabilities for each of said at least one identified best-performing content server is obtained from a flow map characterizing data flow in the network.

Wolf discloses a method and apparatus for load balancing of web cluster farms including:

- wherein said assignment probabilities for each of said at least one identified best-performing content server is obtained from a flow map characterizing data flow in the network (abstract, col. 2, lines 42-52, col. 3, lines 13-31 and col. 9, lines 40-62).

Given the teaching of Wolf, it would have been obvious to one of ordinary skill in the art to modify Brendel in view of Schuba by including probability rules for selecting the best server

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within the web server cluster in order to distribute a client request to an appropriate server for servicing the request.

Response to Arguments

4. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

The Office notes the following arguments:

- a. Jindal does not teach or suggest creating a plurality of client clusters, wherein each of said plurality of client clusters includes one or more clients having similar network distances properties.
- b. Jindal does not teach or suggest determining network distances between each of said plurality of client clusters and each of said plurality of content servers.
- c. Jindal nor Narendran does not teach or suggest creating a plurality of client clusters, wherein each of said plurality of client clusters includes one or more clients having similar network distances properties and determining network distances between each of said plurality of client clusters and each of said plurality of content servers.

In considering (a)-(c), Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 6,389,448 to Primak et al

U.S. Pat. No. 6,314,465 to Paul et al

U.S. Pat. No. 6,052,718 to Gifford

U.S. Pat. No. 6,175,957 to Ju et al

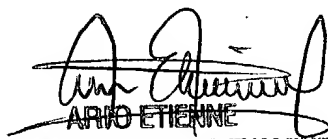
Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaShonda T. Jacobs whose telephone number is 703-305-7494. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on 703-308-7562. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LaShonda T. Jacobs
Examiner
Art Unit 2157

ltj
September 24, 2004


ARIO ETIENNE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100